

SOUTHWEST FISHERIES SCIENCE CENTER
SECOND QUARTER REPORT-FY 2002
For the period January 1, 2002 through March 31, 2002

Submitted by: John Hunter, Division Director, Fisheries Resources Division

Title of Accomplishment or Milestone: Complete chapter on status of fish stocks for Highly Migratory Species Fishery Management Plan.

Current Status: Completed chapter is in present draft Fishery Management Plan, which underwent public review during February of this year. On March 14, 2002 the Pacific Fishery Management Council will consider adoption of this Plan.

Background Information: The Pacific Fishery Management Council's Highly Migratory Species Fishery Management Plan has been in development for over 2 years now; Chapter 3 of the FMP deals with the status of the fish stocks that will be actively managed by the Plan. The Magnuson-Stevens Act states that such species be assessed for their MSY potential.

Purpose of Activity: Describe the biology and fisheries of actively managed species, including that of the common thresher shark. This latter shark is a species of major concern to west-coast commercial and sport fishers, and to conservationists as well. It had heretofore not been assessed for yield potential. Catch information is only available from off California, although this shark is also important in Mexican fisheries. The California population (at least) was overfished in the early 1980s, but season and area restrictions have since resulted in slow recovery.

Description of Accomplishment and Significant Results: An estimate of local (California) MSY (LMSY) was obtained using an estimate of the common thresher's intrinsic rate of increase (r) that was estimated by a method developed "in house." Basically, LMSY is estimated as $r * (\text{average population size})$, where in a growing population the latter is $(\exp(r)-1)/r$, with $(\exp(r)-1)$ being the fraction of the population taken sustainably. Then dividing the latter into the catch when the population was approximately stationary (when catch rates began to recover) estimated the population size at that time, which was then prorated into an estimate of LMSY. The LMSY estimate was approximately 450 mt, to be compared with the present catch level of about 300 mt.

Significance of Accomplishment: The LMSY estimate for the common thresher demonstrates how a species' r -potential can be used to estimate MSY for a changing (here, growing) population. The method is based on estimating a population's rate of change (rather than a cohort's). This r -estimate is specific to the population's productivity at MSY, and, importantly, it does not depend upon arbitrary or best-guess survival schedules, as commonly used in demography.

Problems: None

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